

Weather Brew

NWS Milwaukee/Sullivan

Spring 2009

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History of the NWS in Southern Wisconsin

The National Weather Service (NWS) is a federal agency that spans all 50 states and several U.S. Territories. It is comprised of many national centers that specialize in everything from numerical modeling to climate and hurricane prediction. At the regional level, another tier of support facilities handle regional climate issues, conduct river forecasting and support local Weather Forecast Offices (WFO). The WFO in Sullivan, Wisconsin, which has the site ID MKX, is just one of 122 local offices found within the NWS.

Although MKX is a small part of a much larger organization, the NWS can trace its origins back to the work of Wisconsin's first scientist. In 1836, Increase Lapham, an engineer and naturalist, moved to Milwaukee. Shortly thereafter, he began taking and recording weather observations at his home located near the intersection of McKinley and Old World 3rd Streets. Observations continued in downtown Milwaukee, moving to several different locations, until 1941 when the official observation moved to Mitchell Field.



NWS Milwaukee/Sullivan Office and WSR-88D Radar

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Lapham and the scores of observers that followed him recorded temperature, precipitation
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About this Newsletter

We here at the Milwaukee/Sullivan Forecast Office hope you will enjoy a look inside the goings on of our office. We will update you each spring and fall on the latest news and announcements from our staff. You'll find some regular columns including Rusty's Roundup and the Im-

prove Your Weather Knowledge section where we just might be able to teach you something new. We look forward to sharing news, notes, announcements, events and much more with each issue of the Weather Brew! ■

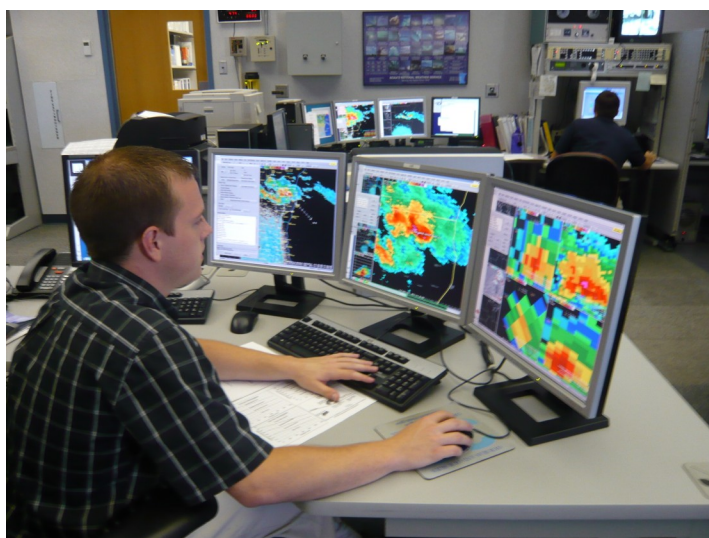


History of the NWS (Continued from Page 1)

tion and hydrologic data. Their observations showed the effect of urbanization and the tremendous influence of Lake Michigan on southeast Wisconsin's climate. With Lapham's help, on November 1, 1870, the Milwaukee Office of the U.S. Weather Bureau, the precursor of today's NWS, was first established and located in the Chamber of Commerce Building in downtown Milwaukee. The office was under the U.S. Army Signal Service.

Eighty miles to the west, weather records for Madison date back to 1869 when weather observers began recording data at Bascom Hall on the University of Wisconsin-Madison campus. Professors ran the program and frequently enlisted the aid of science students, including the now renowned naturalist, John Muir. The Smithsonian Institute supplied the original instruments. In 1904, the Weather Bureau was established at North Hall on Madison's campus and forecasts began to accompany observations. A few decades later, the Madison Weather Bureau office moved to Truax Field (1939), a year after it was built. For the next 57 years, the Madison office would operate in the full capacity of supplying weather and radar data to south central Wisconsin along with the responsibility to notify and warn counties of severe weather and winter storms.

For the majority of the 20th century, there were five National Weather Service (NWS) offices in Wisconsin: A forecast office at Mitchell Field in Milwaukee (NWSFO



Meteorologist Bill Borghoff viewing a thunderstorm in the operations area at MKX.

ARX), Green Bay (NWSFO GRB), and Milwaukee/Sullivan (NWSFO MKX). All three offices were equipped with weather radars and had forecast and warning responsibilities for the counties in their county warning areas (CWA). In addition, forecast offices in Duluth and Minneapolis were given responsibility for various counties in Wisconsin.

On October 30, 1989, the new Milwaukee/Sullivan WFO opened in east-central Jefferson County while observations continued at Mitchell Field. Several years later,

"The salubrity of the climate, the purity of the atmosphere, and of the water, which is usually obtained from copious living springs; the coolness and short duration of summer, and the dryness of the air during winter, all conspire to render Wisconsin one of the most healthy portions of the United States."

Increase Lapham, 1844

MKE), which had ultimate administrative and forecast responsibility for the entire state of Wisconsin, a surveillance radar station at Neenah (WSMO EEW), a local warning and observation office (WSO GRB) at the airport in Green Bay, a local warning, observation and back-up radar office at Truax Field in Madison (WSO MSN), and a part time warning and observation office in La Crosse (WSO LSE).

During the 1980's the National Oceanic and Atmospheric Administration (NOAA), launched a major program to modernize the NWS. This resulted in three state-of-the-art weather service offices: La Crosse (NWSFO

on April 1, 1996, the Madison National Weather Service office closed, marking the end of a long tradition. The radar, which was developed in the early 1970s, was decommissioned and an Automated Surface Observing System (ASOS) was installed to generate the official weather observations for Madison. Since the mid 90s, there have been many technological upgrades to equipment and improvements in forecasting, including the commissioning of the WSR-88D Doppler Radar at MKX in September of 1995. However, the organizational structure of the NWS in Wisconsin has remained unchanged since the period of modernization in the 1980s and 90s. ■

MKX Welcomes New Meteorologist In Charge

The Milwaukee/Sullivan office welcomed a new leader in October 2008. Steve Brueske became the Meteorologist In Charge, taking over for Ken Rizzo, who retired in September. Steve comes to us from NOAA’s Western Region Headquarters in Salt Lake City, UT, where he was the Deputy Chief of the Systems Operations Division.

Steve has 24 years of experience in meteorology, including an Air Force background and studies at Bethel University in Minnesota, Creighton University in Omaha, NE and a Masters Degree from Penn State University. Steve has been a part of the NOAA team for many years, working as a radar instructor in Norman, the Science and Operations Officer in Charleston, SC and the MIC in Great Falls, MT.

Steve is excited to join the Milwaukee Office. “One of the most important duties for any meteorologist in charge is to make sure area residents are promptly in-

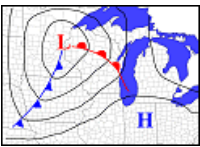
formed of changing weather conditions. This forecast office has a very talented staff with long-standing relationships with local government, emergency managers and the media, and I look forward

to working with all of our partners to provide accurate and timely weather forecasts and warnings.”

Steve isn't new to the Midwest and the weather experienced here. He grew up near Minneapolis, so the move to southern Wisconsin brings him back closer to home. Steve brings plenty of fresh ideas and has been a positive addition to the MKX staff!■



Steve Brueske, Meteorologist in Charge



Improve Your Weather Knowledge

What is the difference between a watch and a warning?

Officially, a **WATCH** is issued when overall conditions appear favorable for the development of severe weather. Watches typically last several hours and are commonly in effect for multiple counties at one time. When a watch is issued, people should be aware that inclement weather is possible and be ready to take precautions if they notice deteriorating weather conditions or if a warning is issued.

On the other hand, a **WARNING** is issued when Doppler radar or trained spotters indicate that severe weather is happening NOW. A warning is issued for a smaller area that may cover portions of one or more counties. Persons should take immediate action to protect themselves and property if they are in the path of the approaching severe weather.

What are the criteria for warnings being issued?

A tornado warning is issued whenever a tornado is

spotted or indicated on radar. The minimum criteria for a severe thunderstorm warning is hail of at least three-quarters of an inch in diameter (about the size of a quarter) or wind at least 58mph. Note, there is currently discussion of changing the hail criteria to 1”. Keep an eye on our website for updates.■

Hail Size Estimation Table

Pea.....	0.25 inch
Penny.....	0.75 inch
Nickel.....	0.88 inch
Quarter.....	1.00 inch
Half Dollar.....	1.25 inches
Ping Pong Ball.....	1.50 inches
Golf Ball.....	1.75 inches
Tennis ball.....	2.50 inches
Baseball.....	2.75 inches
Softball.....	4.50 inches

Spring is Time for Spotter Training

Trained storm spotters play an essential role in the National Weather Service mission to protect life and property. The forecasters in the office do everything possible to provide advanced warning to persons who will be affected by incoming severe weather, but they can't be everywhere in the county warning area to see what is actually happening. That is where you can help!

The MKX NWS office holds spotter training classes in every county of our forecast area each spring. These classes last about two hours, and participants are taught how to recognize what makes a storm severe or tornadic, what to look for, and what to not be fooled by.

One or more staff members of MKX NWS will provide this training. There is no charge, and most classes

are open to the public. This year we also begin providing a limited number of advanced spotter training courses that are a little more in-depth than most classes.

For those who decide after the training that they'd like to be an official spotter, you will be asked to call us to report severe weather you experience. We may also call you on severe weather days to get confirmation of what we expect is happening in your area.

If you are interested in becoming a trained storm spotter, or simply want to learn a little bit about severe weather, please join us at one of the training classes in your area.

For more information and a schedule of this year's classes, visit <http://www.crh.noaa.gov/mkx/?n=spotters>. ■

<u>County</u>	<u>Date</u>	<u>City</u>
Columbia:	March 18 and 19	Wisconsin Dells, Portage
Dane:	March 3, 23, April 27	Waunakee, Madison
Dodge:	April 16	Horicon, Beaver Dam
Fond du Lac:	April 13	Fond du Lac
Green:	March 31	Monroe, Brodhead
Green Lake:	March 16	Green Lake
Iowa:	April 2	Dodgeville
Jefferson:	April 8	Jefferson
Kenosha:	April 20, 29	Bristol
Lafayette:	April 1	Darlington
Milwaukee:	March 12	Franklin, Fox Point
	March 28, April 7	West Allis, Greenfield
Marquette:	March 17	Montello
Ozaukee:	April 15	Port Washington
Racine:	April 22	Racine
Rock:	March 30	Janesville, Beloit
Sauk:	March 19	Baraboo
Sheboygan:	April 14	Sheboygan Falls
Walworth:	March 11	Elkhorn
Washington:	April 21	Hartford
Waukesha:	April 6	Waukesha

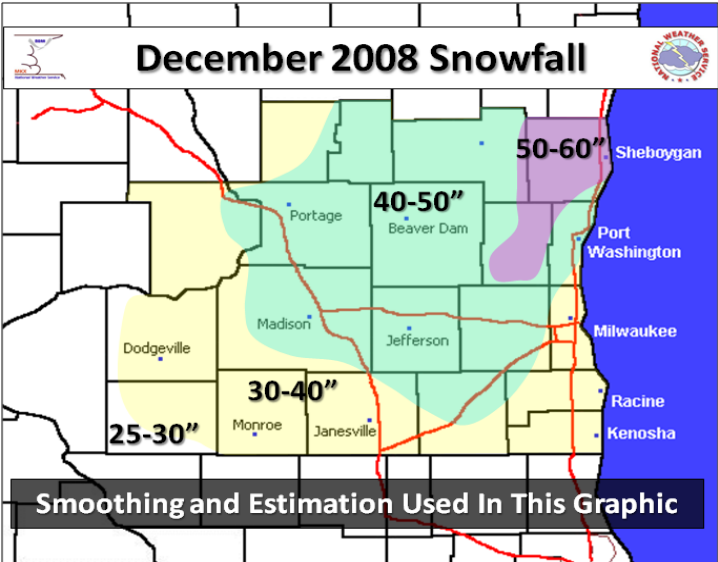


2008-2009 Winter Weather Review: In Like a Lion...Out Like a Lamb

With the historic winter of 2007-08 still looming in our minds, many of us went into this winter thinking, “Hey, it can’t be any worse than last winter.” After all, last winter brought several significant snowstorms, including a February storm that dropped 1 to 2 feet over a large area. When it was all said and done, almost everyone in southern Wisconsin saw at least 75 inches. Many locations eclipsed the 100-inch plateau; these impressive amounts are typically reserved for lake-effect snow belts and the ski slopes of the Rockies. This year, our hope for a return to snowfall normalcy was compromised only a few weeks into December.

The first inch of snow did not wait until December. On November 24, 1 to 4 inches fell across southern Wisconsin, with the area finishing around normal for the month. In December, the skies opened up, and this part of the state saw accumulating snow on 7 of the first 9 days of the month. By December 20, several storms had blanketed Wisconsin, and a couple events brought close to a foot of snow to many locations.

In addition to the snowfall, below normal temperatures in December and January were just road salt in the wound. Milwaukee and Madison were a chilly 4.4 and

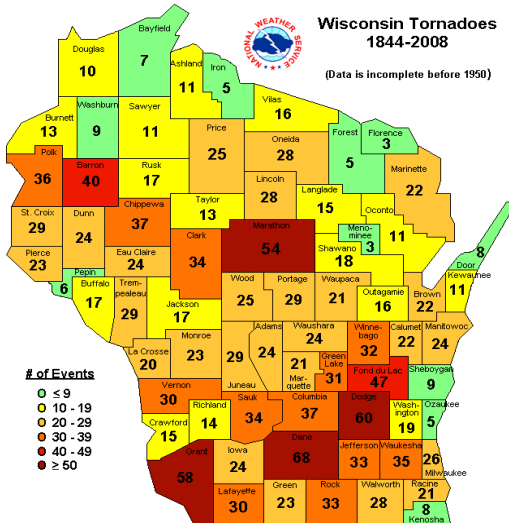


6.4 degrees below normal, respectively, for December and January. The cold peaked in mid-January when lows dropped between 10 and 30 below zero for a couple nights.

From mid-January to the end of February, only 7-10 inches of snow had fallen. Also, February temperatures came in much closer to normal. Milwaukee finished 1.7 degrees above normal and Madison was 1.0 degree above normal. Bring on Spring! ■

Wisconsin Tornado History (By Courtney Obergfell, SCEP)

While peak tornado season is May through August, tornadoes have occurred in Wisconsin in every month except February. Every county in Wisconsin has experienced at least one tornado since records began in 1844. Dane and Dodge counties have the highest tornado counts with 68 and 60 tornadoes, respectively. June is the most common month for tornadoes to occur. In Wisconsin, most tornadoes occur between 4 and 6 PM CST with 5 PM CST being the most common hour for the initiation of tornadoes. In general, the northern part of the state has experienced less tornadic activity. However, a lower population density has likely led to more missed tornadoes over the years.



The 2008 tornado season was very active in Wisconsin with a total of 38 tornadoes. This makes 2008 the 3rd most active year for tornadoes in Wisconsin and well-above the normal annual average of 21 tornadoes. Oddly enough, the year’s strongest tornado occurred on January 7 when an EF3 tornado struck western Kenosha County. Abnormally warm air caused record high temperatures in southern Wisconsin and brought about the outbreak of severe weather. This was only the second time in recorded history that there was a tornado day in January in Wisconsin. In June alone, 22 tornadoes occurred throughout Wisconsin; due to early warnings, there were no fatalities. Property damage from the 38 tornadoes in 2008 was estimated to total near \$23 million. ■

New Waukesha TAF (By Marcia Cronic, Forecaster)



The Milwaukee/Sullivan NWS office regularly issues Terminal Aerodrome Forecasts (TAFs) for several airports in south central and southeast Wisconsin: General Mitchell International Airport in Milwaukee, Dane County Regional Airport in Madison, and Kenosha Regional Airport. Beginning March 31, this office will add a fourth TAF site to the list: Waukesha County Airport. The Waukesha County Airport is the third busiest airport in the state of Wisconsin, with over 65,000 landings and takeoffs in a given year, and is home to more than 275 privately

owned aircraft.

TAFs contain weather forecasts at the surface within a 5-mile radius of the airport. They are used by the aviation community to plan flight categories, paths and approaches. Each TAF includes a 24-hour (30-hour for Milwaukee) forecast of wind direction and speed, visibility and reason for a visibility restriction such as fog, rain or snow, and the ceiling height. The TAFs are written in a concise format that pilots and other aviation customers are trained to read and interpret. Forecasts are issued every six hours, with unscheduled amendments to the forecasts as necessary. ■

NWS At The Wisconsin State Fair (By Marc Kavinsky, Lead Forecaster)

For the first time, the National Weather Service office serving south central and southeast Wisconsin will be staffing an exhibition booth at this year's Wisconsin State Fair. The NWS located near Sullivan has reached an agreement with the Wisconsin Department of Natural Resources Air Quality Division to share space in the south pavilion located in the DNR Park. The DNR Park is located just west of the Wisconsin Exposition Center, as highlighted in the map to the right. The 2009 Wisconsin State Fair runs from Thursday, August 6 through Sunday, August 16. The DNR Park and pavilions will be open from 9 am to 9 pm daily.

Come meet members of the NWS, share a story, and get the latest forecast. We will demonstrate how to navigate our website and make use of its many features, including generating an hour-by-hour forecast of weather conditions and examining the latest graphical weather forecast. We will also show you how to sign up to receive weather alerts via your cell phone.

You'll be able to view a simulated tornado in our tornado chamber and examine our All Hazard NOAA Weather Radio display. Weather brochures will be available to pick up. You'll also be able to learn about the unique relationship the National Weather Service shares with the Wisconsin DNR Air Quality Program. We hope to see you there! ■



Yellow circle shows location of the NWS booth

Staff News and Notes

Jerry Wiedenfeld joined the staff at Milwaukee/Sullivan as the Information Technology Officer (ITO) in January, replacing Kim Licitar who retired in 2008. Jerry previously worked in Washington DC at the NWS Office of Science and Technology where he was a programmer in the Meteorological Development Lab for the past 5 years. Jerry grew up in southern Wisconsin and went to school at Valparaiso University in Indiana.

Denny VanCleve became the newest member of the MKX staff in February. Denny joins our office as a forecaster after spending the past few years as a meteor-

ologist in the Flagstaff, Arizona office. Southern Wisconsin is closer to home for Denny—he grew up in Lansing, MI and went to school at Albion College in Michigan, and Florida State University.

Jeff Craven, MKX Science and Operations Officer was elected to the office of Treasurer for the National Weather Association. Jeff has been involved with the national organization for more than 10 years and has been involved in a number of committees. For more information about the NWA visit <http://www.nwas.org>. ■

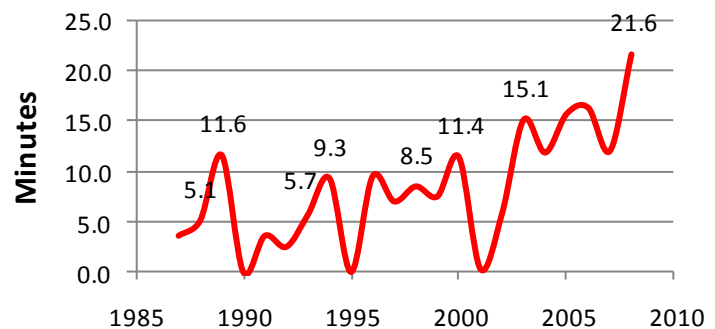
Rusty's Roundup

(By Rusty Kapela, Warning Coordination Meteorologist)

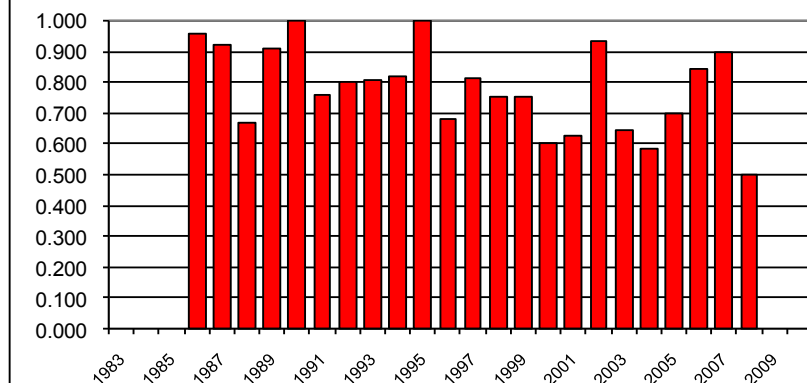
Greetings! The 2009 severe weather season is about to rev up, after yet another long, cold winter! First of all, a **BIG** thanks to all severe weather spotters for your dedication and efforts through the years! Your timely reports have helped us improve our severe weather performance over the years. So, what do the numbers show? How good is the Milwaukee/Sullivan staff at issuing tornado warnings for its County Warning Area? How often do we cry wolf? Also, how much lead time do we provide you?

Below is a graphic showing that in 2008, only half of the tornado warnings were “false alarms.” However, keep in mind, a number of the false alarms had funnel cloud or rotating wall cloud reports. The long-term

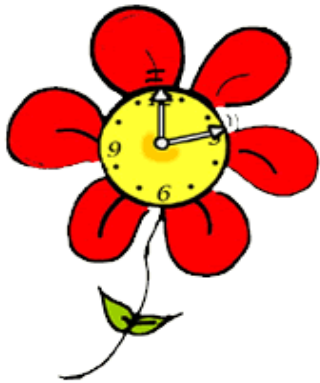
Tornado Warning Average Lead Time



Tornado Warning False Alarm Ratio



trend is downward, which is what we want. In 2008, we had a false alarm ratio of 0.500. Also, note that the average lead time of tornado warnings prior to tornado spin-up has increased over the years, which is also what we want to see. In 2008, we averaged 22 minutes! It's a no-brainer. Better radar, better in-house training for the forecasters, and better spotter storm reports are the reasons for such improvement! With the help of our spotters and public reports, combined with continually improving technology, we should see these numbers continue to improve. ■



Spring Ahead

Daylight Saving Time Begins

March 8, 2009 - 2 AM

Spring Equinox

Start of Astronomical Spring

March 20, 2009 - 6:44 AM CDT



Comments and suggestions are always welcome. Your feedback is very important to us!

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CO-OP Corner



Service Awards Presented

Two of our co-op stations received awards in January for long-time service with the NWS office. The City of Whitewater Wastewater Treatment Plant has been an active co-op site for 50 years. The photo above is Superintendent Tim Reel accepting the Honored Institution Award for the plant. The city of Lake Delton also received the Honored Institution Award for 25 years of service. Plant Operator John Brown is shown in the photo on the right accepting the award.

All of our co-op observers are instrumental in the daily operations of the NWS office and we thank each of our more than 80 co-op observers in southern Wisconsin! ■

New WxCoder Procedures

Updates were implemented to WxCoder III in January to help improve the reliability of data received from our co-op observers.

At the end of each month, in order to submit the final observation form to us here at the NWS: you will need to go under "Observations" and select your site. You will see the "End of the Month Verification" section. If there is a month listed to closeout, simply click on it and take a look at the observations you have entered for the month.

If all are correct, click the button at the bottom of the form that says "Close Out" (month). Once you've closed out a month, you will not be able to go back in to change the data for that month. ■